

CLAIMS

We claim:

1. A composition comprising at least one bioadhesive, at least one adjuvant, and at least one antigen.
2. The composition of claim 1 wherein the antigen is present at about 0.1% to 40% (w/w) antigen to bioadhesive and the adjuvant is present at about 0.1% to 40% (w/w) adjuvant to bioadhesive.
3. The composition of claim 1 wherein the bioadhesive is a mucoadhesive selected from the group consisting of cross-linked derivatives of poly(acrylic acid), polyvinyl alcohol, polyvinyl pyrrolidone, polysaccharides, hydroxypropyl methylcellulose, lectins, fimbrial proteins, and carboxymethylcellulose.
4. The composition of claim 3 wherein the poly(acrylic acid) is selected from the group consisting of carbopol and polycarbophil.
5. The composition of claim 3 wherein the mucoadhesive is a polysaccharide.
6. The composition of claim 5 wherein the polysaccharide is selected from the group consisting of alginate and chitosan.
7. The composition according to any of claims 1-6 wherein the immunological adjuvant is selected from the group consisting of alum, detoxified mutants of bacterial ADP-ribosylating toxins, oil-in-water emulsion formulations, and muramyl peptides.
8. The composition of claim 7 wherein the bacterial ADP-ribosylating toxin is selected from the group consisting of LT-MF59, MPL, LT-K63, LT-R72, and PT-K9/G129.

9. The composition of claim 1 wherein the selected antigen is a viral antigen.
10. The composition of claim 9 wherein the viral antigen is an influenza antigen. —
- 5 11. The composition of claim 1 wherein the bioadhesive is provided as a microsphere. —
12. The composition of claim 9 wherein the selected antigen is encapsulated within the microsphere.
- 10 13. The composition of claim 9 wherein the selected antigen is adsorbed to the microsphere.
14. A pharmaceutical composition comprising the composition of claim 1 and at least one pharmaceutically acceptable mucosal excipient.
- 15 15. A method of making a pharmaceutical composition comprising combining the composition of claim 1 and at least one pharmaceutically acceptable mucosal excipient.
16. A method of immunization comprising administering a therapeutically effective amount of the composition of claim 14 to a vertebrate subject. —
- 20 17. A method of generating an immune response against an antigen comprising administering the composition of claim 1 to a vertebrate subject. —
- 25 18. A method of generating an immune response against an antigen comprising administering the composition of claim 14 to a vertebrate subject. —
19. A method of treatment comprising administering the composition of claim 1 to a vertebrate subject.

20. A method of treatment comprising administering the composition of claim 14 to a vertebrate subject.

21. A method of enhancing an immunological response against an antigen comprising administering the composition of claim 1 to a vertebrate subject.

22. A method of enhancing an immunological response against an antigen comprising administering the composition of claim 14 to a vertebrate subject.

23. A pharmaceutical composition comprising at least one bioadhesive, at least one antigen, and at least one pharmaceutically acceptable mucosal excipient and, optionally an adjuvant.

24. A method of immunization comprising administering a therapeutically effective amount of the composition of claim 23 to a vertebrate subject.

25. A method of generating an immune response against an antigen comprising administering the composition of claim 23 to a vertebrate subject.

26. A method of treatment comprising administering the composition of claim 23 to a vertebrate subject.

27. A method of enhancing an immunological response against an antigen comprising administering the composition of claim 23 to a vertebrate subject.

28. A method of making a pharmaceutical composition comprising combining the composition of claim 7 and at least one pharmaceutically acceptable mucosal excipient.

29. A method of generating an immune response against an antigen comprising administering the composition of claim 7 to a vertebrate subject.

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30. A method of treatment comprising administering the composition of claim 7 to a vertebrate subject.

31. A method of enhancing an immunological response against an antigen comprising administering the composition of claim 5 7 to a vertebrate subject.

32. The composition of claim 7 wherein the selected antigen is a viral antigen.

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